

AMENDMENTS TO THE CLAIMS:

The following listing of claims replaces all prior listings, and all prior versions, of claims in the application.

LISTING OF CLAIMS:

1-2. (Cancelled).

3. (Currently amended) A plasma etching treatment apparatus for conducting etching in at least two steps and without conducting a separate cleaning step, comprising:

an etching treatment room;

a substrate stage for placing a semiconductor substrate thereon installed in the etching treatment room;

a temperature control mechanism for the substrate stage;

a plasma generating means for generating plasma in the etching treatment room;

a gas introducing means for introducing (a) a treating gas for etching and (b) a treating gas for decomposing and removing etching products, into the etching treatment room, and shower holes provided between an outlet of the gas introducing means and the plasma generated.

wherein the semiconductor substrate is etched using plasmas obtained from each introduced treating gas in each step, while the treating gas (b) removes etching products retained in the etching treatment room without conducting a separate cleaning step; and

a monitoring means for monitoring a retained amount of etching products and being controlled so as to stop each plasma discharge automatically at a time the monitored value reaches a set value.

4. (Previously presented) The plasma etching treatment apparatus according to claim 3, wherein said gas introducing means includes a source of the treating gas for decomposing and removing etching products and a source of the treating gas for etching.

5. (Currently amended) The plasma etching treatment apparatus according to claim 3, wherein said apparatus further includes an electrostatic adsorption device to hold the ~~the~~ semiconductor substrate on the substrate stage.

6. (Previously presented) The plasma etching treatment apparatus according to claim 5, wherein said apparatus is adapted to discharge charges stored between the substrate stage and a semiconductor substrate placed thereon, and said gas introducing means introduces said treating gas for decomposing and removing etching products, into the etching treatment room, when said charges are discharged.

7. (Currently amended) A plasma etching treatment apparatus for conducting etching in at least two steps and without conducting a separate cleaning step, comprising:

an etching treatment room;

a substrate stage, for placing a semiconductor substrate thereon, installed in the etching treatment room;

a temperature control mechanism for the substrate stage;

a plasma generating means for generating plasma in the etching treatment room; and

a gas introducing means for introducing a treating gas into the etching treatment room[[,]; and

_____ shower holes provided between an outlet of said gas introducing means and the plasma generated.

wherein said gas introducing means introduces different gas compositions in each step of the at least two steps, at least one of the gas compositions being a gas capable of decomposing and vaporizing etching products, and said semiconductor substrate is etched by plasmas obtained from the different gas compositions of the at least two steps, etching products produced by a previous etching treatment being removed without conducting a separate cleaning step.

8. (New) The plasma etching treatment apparatus according to claim 3, wherein said temperature control mechanism for the substrate stage provides temperature control of the substrate, whereby etching rate and etching shape in the substrate surface can be made uniform.

9. (New) The plasma etching treatment apparatus according to claim 5, wherein said temperature control mechanism for the substrate stage provides temperature control of the substrate, whereby etching rate and etching shape in the substrate surface can be made uniform.

10. (New) The plasma etching treatment apparatus according to claim 7, wherein said apparatus further includes an electrostatic adsorption device to hold the semiconductor substrate on the substrate stage.

11. (New) The plasma etching treatment apparatus according to claim 10, wherein said temperature control mechanism for the substrate stage provides temperature control of the substrate, whereby etching rate and etching shape in the substrate surface can be made uniform.

12. (New) The plasma etching treatment apparatus according to claim 7, wherein said temperature control mechanism for the substrate stage provides temperature control of the substrate, whereby etching rate and etching shape in the substrate surface can be made uniform.